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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/679,517	10/07/2003	Yasufumi Takagi	046124-5240	8426
9629	7590	07/12/2004	EXAMINER	
MORGAN LEWIS & BOCKIUS LLP 1111 PENNSYLVANIA AVENUE NW WASHINGTON, DC 20004			QUASH, ANTHONY G	
			ART UNIT	PAPER NUMBER
			2881	

DATE MAILED: 07/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/679,517	TAKAGI ET AL.	
	Examiner	Art Unit	
	Anthony Quash	2881	

-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3/5/04</u> . | 6) <input type="checkbox"/> Other: ____ |

Claim Objections

1. Claim 7 is objected to because of the following informalities: of the statement "A mass spectroscopy according to 'claim 7' ..." It is believed by the examiner that applicant meant to state "... according to claim 6..." Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Hiroshi [JP 11-186593]. As per claim 1, Hiroshi [JP 11-186593] discloses a substrate being transparent to the fluorescence; and a nitride semiconductor layer provided on one surface of the substrate, the nitride semiconductor layer having a quantum well structure that emits fluorescence in response to the electron incidence. See Hiroshi [JP 11-186593] abstract, paragraphs [0002, 0005-0006, 0009, 0013-00145, 0018-0021, 0025, 0028, 0033, 0037, 0048-0050, 0058-0061], and figs. 1-8,14,16.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hiroshi [JP 11-186593] in view of Niki [6,674,098]. As per claim 2, Hiroshi [JP 11-186593] teaches all aspects of the claim except for explicitly stating that the width of the well structure being 4 nm or less. However, Niki [6,674,098] teaches quantum well structures having a thickness/width of 5 nm or less. See Niki [6,674,098] col. 11 lines 5-15 and col. 16 lines 20-30. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the width of the well structure be 4 nm or less, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art.
4. Claims 1,3-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kondo [2004/0061054] in view of Hiroshi [JP 11-186593]. As per claim 1, Kondo [2004/0061054] teaches a substrate being transparent with respect to the fluorescence, and a nitride semiconductor layer provided on one surface of the substrate, for emitting fluorescence in response to the electron incidence. See Kondo [2004/0061054] abstract, figs. 1, 7,9-13, paragraphs [0003, 0005-0014, 0016-0025, 0045-0047, 0051-

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0055, 0059, 0078-0082, and 0136]. However, Kondo [2004/0061054] does not explicitly state that nitride layer having a quantum well structure. Hiroshi [JP 11-186593] does teach the nitride layer having a quantum well structure. See Hiroshi [JP 11-186593] abstract, paragraphs [0002, 0005-0006, 0009, 0013-00145, 0018-0021, 0025, 0028, 0033, 0037, 0048-0050, 0058-0061], and figs. 1-8,14,16. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the nitride layer contain a quantum well structure in order to allow a higher luminous efficiency and a reduced deterioration of the illuminant during light emission as taught in Hiroshi [JP 11-186593].

As per claim 3, Kondo [2004/0061054] teaches a photo-detector having sensitivity for fluorescence emitted from the illuminant. See Kondo [2004/0061054] abstract.

As per claim 4, Kondo [2004/0061054] teaches a photo-detector having a sensitivity with respect to fluorescence emitted from the illuminant, and a vacuum chamber including at least the illuminant installed inside, wherein the scanning electron microscope guides secondary electrons, which are generated from a sample disposed inside the vacuum chamber by scanning the surface of the sample with an electron beam, to the electron beam detector, and taking an image of the sample by making correspondence between the scanning position of the sample and the output of the electron beam detector. See Kondo [2004/0061054] abstract, figs. 1, 7,9-13, paragraphs [0003, 0005-0014, 0016-0025, 0045-0047, 0051-0055, 0059, 0078-0082, and 0136].

As per claim 5, Kondo [2004/0061054] in view of Hiroshi [JP 11-186593] teach all aspects of the claim except for explicitly stating that width of the quantum well structure in the illuminant being 4 nm or less. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the width of the well structure be 4 nm or less, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art.

As per claim 6, Kondo [2004/0061054] teaches an electron beam detector including an illuminant, and a photo-detector having a sensitivity for fluorescence emitted from the illuminant, a vacuum chamber, including at least the illuminant installed inside, a separating section which spatially or temporally separates ions generated from a sample inside the vacuum chamber in accordance with masses of the ions, and a dynode to be irradiated with ions that have been separated at the separation section, wherein the secondary electrons, which are generated from the dynode in accordance with the incidence of ions onto the dynode, are guided to the electron beam detector and mass spectroscopy of the sample is carried out based on the output of the electron beam detector. See Kondo [2004/0061054] abstract, figs. 1, 7, 9-13, paragraphs [0003, 0005-0014, 0016-0025, 0045-0047, 0051-0055, 0059, 0078-0082, and 0136].

As per claim 7, Kondo [2004/0061054] in view of Hiroshi [JP 11-186593] teach all aspects of the claim except for explicitly stating that width of the quantum well structure in the illuminant being 4 nm or less. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the width of the well structure be 4

nm or less, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent Nos. 5,998,925 to Shimizu et al, and 6,384,519 to Beetz, Jr. et al. are considered pertinent to the applicants' disclosure. Shimizu [5,998,925] is considered pertinent because of its disclosure on a nitride semiconductor, fluorescent material, and a quantum well structure in the nitride semiconductor. Beetz [6,384,519] is considered pertinent due to its discussion on a micro-dynode integrated electron multiplier.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony Quash whose telephone number is (571)-272-2480. The examiner can normally be reached on Monday thru Friday 9 a.m. to 5 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Lee can be reached on (571)-272-2477. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A. Quash

AL
7/8/04

Nikita Wells
NIKITA WELLS
PRIMARY EXAMINER 07/08/04